

# Appendix B

## Lake Michigan Areas of Concern

For more information, visit the AOC website <http://www.on.ca.ca/glim/raps/aoc-map.html>

April 16, 2002

AOC Name	Primary Contaminants	Geographic Area	Stressors	Impacts on Human, Aquatic, and Wildlife Health, the Environment, and the Economy and their Effects	Programs	Clean-Up Actions	Key Activity Needed	Barrier	Next Step
<b>Grand Calumet River</b>	<ul style="list-style-type: none"> <li>PCBs</li> <li>PAHs</li> <li>Mercury</li> <li>Cadmium</li> <li>Chromium</li> <li>Lead</li> <li>Pathogens</li> <li>Biochemical oxygen demand</li> <li>Suspended solids</li> <li>Oil and grease</li> </ul>	Grand Calumet River; Lagoon, East Branch and West Branch; Indiana Harbor and Ship Canal, The Lake; George Branch of the Canal, Wolf Lake, George Lake and Nearshore Lake Michigan.	<ul style="list-style-type: none"> <li>Contaminated Sediments</li> <li>Combined Sewer Overflows</li> <li>Contaminated groundwater</li> <li>Contaminated land sites</li> <li>Habitat Fragmentation</li> <li>Fire Suppression</li> <li>ANS</li> </ul>	<ul style="list-style-type: none"> <li>Restrictions on eating fish (Human health, sportfishing, recreation)</li> <li>Tainted fish and wildlife flavor (Sportfishing, hunting)</li> <li>Harmed fish and wildlife health and reproduction (Ecosystem sustainability, human health, recreation)</li> <li>Deformities for fish, birds or animals and tumors in fish (Ecosystem sustainability, human health, recreation)</li> <li>Harm to bottom dwelling aquatic life (Ecosystem sustainability)</li> <li>Restricted dredging (Shipping)</li> <li>Excessive nutrients that cause algae, harming aquatic populations and that leads to bacteria growth (Aesthetics, recreation sportfishing)</li> <li>Contaminated drinking water, or poor taste or odor (Human health, fish and wildlife health)</li> <li>Beach closings (Recreation, human health)</li> <li>Waste material on shorelines and oily sheen on water (Aesthetics, recreation)</li> <li>Impaired food supply at bottom of the food chain (Ecosystem sustainability, sportfishing)</li> <li>Added costs to agriculture and industry (Industry)</li> <li>Loss of fish and wildlife habitat (Recreation, open space)</li> </ul>	<ul style="list-style-type: none"> <li>Superfund</li> <li>RCRA</li> <li>Clean Water Act</li> <li>WRDA</li> <li>Navigational Dredging</li> <li>Natural Resource Damage Assessment</li> </ul>	<ul style="list-style-type: none"> <li>USX dredging</li> <li>West Branch Remediation</li> <li>GSD Sed. Remediation</li> <li>Navigational dredging</li> <li>LTV cleanup</li> </ul>	<ul style="list-style-type: none"> <li>Dredging</li> <li>CSO Long Term Control Plans</li> <li>Issue</li> <li>NPDES Permits</li> <li>BUI</li> <li>Indicator Monitoring</li> <li>TMDL underway</li> <li>West Branch assessment</li> </ul>	<ul style="list-style-type: none"> <li>Public concern regarding location of contaminated material</li> <li>Local funding and match for federal projects</li> <li>Legal concerns</li> <li>Permitting</li> <li>Monitoring resources</li> </ul>	<ul style="list-style-type: none"> <li>Dredging at USX (2002)</li> <li>NRDA-Complete PRP negotiations.</li> <li>ACOE- WRDA Diagnostic Feasibility Study</li> <li>USX-Build Corrective Action Management Unit</li> <li>GSD-Site Characterization</li> <li>TMDL-Resolve modeling issues</li> <li>Monitor BUI Indicators</li> <li>ECl slurry wall</li> </ul>
<b>Kalamazoo River Michigan</b>	<ul style="list-style-type: none"> <li>PCBs</li> <li>Phosphorus</li> <li>Sediments</li> </ul>	From Morrow Dam, which forms Morrow Pond and extends 80 miles downstream to Lake Michigan.	<ul style="list-style-type: none"> <li>Nonpoint pollution</li> <li>Sediments</li> <li>Contaminated sediment landfills</li> </ul>	<ul style="list-style-type: none"> <li>Restrictions on eating fish (Human health, sportfishing, recreation)</li> <li>Harmed fish and wildlife health and reproduction (Ecosystem sustainability, human health, recreation)</li> <li>Deformities or reproductive problems for birds or animals (Ecosystem sustainability, human health, recreation)</li> <li>Harm to bottom dwelling aquatic life (Ecosystem sustainability)</li> <li>Restricted dredging (Shipping)</li> <li>Beach closings (Recreation, human health)</li> <li>Occasional spills or runoff events odor or visual aesthetics problems (Aesthetics, recreation, wildlife and human health)</li> <li>Loss of fish and wildlife habitat (Recreation, open space)</li> </ul>	<ul style="list-style-type: none"> <li>Superfund</li> <li>Clean Water Act</li> <li>Brownfields</li> <li>Natural Resource Trustee's Damage Assessment</li> </ul>	<ul style="list-style-type: none"> <li>Superfund removal of 150,000 cubic yards of PCB-contaminated sediments from Bryant Mill Pond</li> <li>Nonpoint pollution projects</li> <li>Erosion control programs</li> </ul>	<ul style="list-style-type: none"> <li>Dredging/Excavation</li> <li>Superfund site cleanup decision action</li> <li>Stream buffers</li> <li>Dam removal</li> </ul>	<ul style="list-style-type: none"> <li>PRP court case</li> <li>Local funding match for federal projects</li> </ul>	<ul style="list-style-type: none"> <li>Continue NRDA assessment</li> <li>Finish remedial investigation/remedial action</li> <li>Investigate strategy and determine action</li> </ul>
<b>Lower Fox River/Southern Green Bay Wisconsin</b>	<ul style="list-style-type: none"> <li>PCBs</li> <li>NH3</li> <li>BOD</li> <li>Phosphorus</li> <li>Suspended solids</li> <li>Mercury</li> <li>Heavy metals</li> <li>Pathogens</li> </ul>	The lower 11.2 km of the Fox River and a 55 square kilometer area of southern Green Bay out to Point au Sable and Long Tail Point.	<ul style="list-style-type: none"> <li>Urban and rural runoff</li> <li>Wastewater discharges</li> <li>Sediments</li> <li>Aquatic nuisance species</li> <li>Coastal &amp; watershed habitat loss</li> <li>Dams</li> </ul>	<ul style="list-style-type: none"> <li>Restrictions on eating fish and fowl (Human health, sportfishing, recreation)</li> <li>Loss of fish and wildlife habitat (Recreation, open space)</li> <li>Deformities or reproductive problems for birds or animals (Ecosystem sustainability, human health, recreation)</li> <li>Harm to bottom dwelling aquatic life (Ecosystem sustainability)</li> <li>Restricted dredging (Shipping)</li> <li>Contaminated drinking water, or poor taste or odor (Human health, fish and wildlife health)</li> <li>Beach closings (Recreation, human health)</li> <li>Excessive nutrients that cause algae, harming aquatic populations and that leads to bacteria growth (Aesthetics, recreation sportfishing)</li> <li>Visible pollution in water (Aesthetics, recreation, wildlife and human health)</li> <li>Impaired food supply at bottom of the food chain (Ecosystem sustainability, sportfishing)</li> </ul>	<ul style="list-style-type: none"> <li>Clean Water Act</li> <li>Superfund</li> <li>Natural Resource Trustee's Damage Assessment</li> </ul>	<ul style="list-style-type: none"> <li>Watershed NPS abatement</li> <li>Remedial investigation/remedial action nearly completed</li> <li>Dredging and PCB removal (Deposit in 7,200 cubic yards of sediment removed and Deposit 56/57: 30,000 cubic yards of sediment removed)</li> <li>Dissolved oxygen wastewater</li> </ul>	<ul style="list-style-type: none"> <li>Dredging</li> <li>Pollution Prevention</li> <li>Stream buffers</li> <li>Habitat protection and restoration</li> </ul>	<ul style="list-style-type: none"> <li>Rapid land development</li> <li>Contaminated material disposal</li> </ul>	<ul style="list-style-type: none"> <li>Formal agency decision (Comment period ended January 21, 2002)</li> <li>Removal of 10 million cubic yards of sediment.</li> </ul>



# Appendix B continued

## Lake Michigan Areas of Concern

April 16, 2002

For more information, visit the AOC website <http://www.on.ec.gc.ca/ljlmr/raps/aoc-map.html>

AOC Name	Primary Contaminants	Geographic Area	Stressors	Environment, and the Economy and their Effects	Programs	Clean-Up Actions	Key Activity Needed	Barrier	Next Step	
<b>Manistique River Michigan</b>	<ul style="list-style-type: none"> <li>PCBs</li> <li>Heavy metals</li> <li>Pathogens</li> </ul>	The last 1.7 miles of the river to the mouth of the harbor at Lake Michigan	<ul style="list-style-type: none"> <li>Combined sewer overflow</li> <li>Sediments</li> <li>PCB-contaminated sawdust</li> <li>Wastewater discharges</li> </ul>	<ul style="list-style-type: none"> <li>Restrictions on eating fish (Human health, sportfishing, recreation)</li> <li>Harm to bottom dwelling aquatic life (Ecosystem sustainability)</li> <li>Restricted dredging (Shipping)</li> <li>Beach closings (Recreation, human health)</li> <li>Loss of fish and wildlife habitat (Recreation, open space)</li> </ul>	<ul style="list-style-type: none"> <li>Superfund</li> </ul>	<ul style="list-style-type: none"> <li>Dredging of contaminated sediments completed in 2001(90,000 cubic yards)</li> </ul>	<ul style="list-style-type: none"> <li>Sampling and monitoring continuing as part of delisting process</li> </ul>			
<b>Menominee River Michigan/Wisconsin</b>	<ul style="list-style-type: none"> <li>Arsenic</li> <li>Mercury</li> <li>PCBs</li> <li>Oil and grease</li> <li>Pathogens</li> </ul>	Lower 4.8 km of river to the mouth and 5 km north and south of the mouth along the bay shore	<ul style="list-style-type: none"> <li>Sediments</li> <li>Coastal watershed habitat loss</li> <li>Nonpoint pollution</li> <li>Hardened shorelines</li> </ul>	<ul style="list-style-type: none"> <li>Restrictions on eating fish (Human health, sportfishing, recreation)</li> <li>Harmed fish and wildlife health and reproduction (Ecosystem sustainability, human health, recreation)</li> <li>Harm to bottom dwelling aquatic life (Ecosystem sustainability)</li> <li>Restricted dredging (Shipping)</li> <li>Beach closings (Recreation, human health)</li> <li>Loss of fish and wildlife habitat (Recreation, open space)</li> </ul>	<ul style="list-style-type: none"> <li>RCRA Corrective Action</li> </ul>	<ul style="list-style-type: none"> <li>First stage of arsenic remediation (13,000 cubic yards)</li> <li>Combined sewer overflow project</li> </ul>	<ul style="list-style-type: none"> <li>Dredging</li> <li>Protect riparian and coastal habitat</li> <li>Pollution prevention</li> </ul>	<ul style="list-style-type: none"> <li>Arsenic dredging completed</li> <li>Paint sludge deposit cleanup above river mouth</li> </ul>		
<b>Milwaukee Estuary Wisconsin</b>	<ul style="list-style-type: none"> <li>Phosphorus</li> <li>Nitrogen</li> <li>Pathogens</li> <li>PCBs</li> <li>Metals</li> <li>PAHs</li> </ul>	The lower 5 km of the Milwaukee River ; the lower 4.8 km of the Menominee River; the lower 4 km of the Kinnickinnic River; the inner and outer Harbor and the nearshore waters	<ul style="list-style-type: none"> <li>Urban and rural runoff</li> <li>Wastewater discharges</li> <li>Sediments</li> <li>Habitat loss</li> <li>Dams</li> </ul>	<ul style="list-style-type: none"> <li>Restrictions on eating fish and fowl (Human health, sportfishing, recreation)</li> <li>Harmed fish and wildlife health and reproduction (Ecosystem sustainability, human health, recreation)</li> <li>Deformities or reproductive problems for fish, birds or animals and tumors in fish (Ecosystem sustainability, human health, recreation)</li> <li>Harm to bottom dwelling aquatic life (Ecosystem sustainability)</li> <li>Restricted dredging (Shipping)</li> <li>Excessive nutrients that cause algae, harming aquatic populations and that leads to bacteria growth (Aesthetics, recreation sportfishing)</li> <li>Beach closings (Recreation, human health)</li> <li>Significant level of debris in river (Recreation)</li> <li>Impaired food supply at bottom of the food chain (Ecosystem sustainability, sportfishing)</li> <li>Loss of fish and wildlife habitat (Recreation, open space)</li> </ul>	<ul style="list-style-type: none"> <li>Clean Water Act</li> <li>Clean Air Act</li> <li>Superfund</li> <li>Brownfields</li> <li>Navigational dredging</li> </ul>	<ul style="list-style-type: none"> <li>Water pollution abatement</li> <li>Pollution prevention education begun</li> <li>Dam removal</li> </ul>	<ul style="list-style-type: none"> <li>Dredging</li> <li>Nonpoint source pollution control</li> <li>Stream buffers</li> </ul>	<ul style="list-style-type: none"> <li>High urban density and rapid development</li> <li>Assessment incomplete</li> </ul>	<ul style="list-style-type: none"> <li>Complete assessment</li> </ul>	
<b>Muskegon Lake Michigan</b>	<ul style="list-style-type: none"> <li>PCBs</li> <li>Mercury</li> </ul>	The entire 4149 acre lake and several tributaries.	<ul style="list-style-type: none"> <li>Sediments</li> <li>Nonpoint pollution</li> </ul>	<ul style="list-style-type: none"> <li>Restrictions on eating fish and fowl (Human health, sportfishing, recreation)</li> <li>Harmed fish and wildlife health and reproduction (Ecosystem sustainability, human health, recreation)</li> <li>Harmed bottom dwelling aquatic life (Ecosystem sustainability)</li> <li>Restricted dredging (Shipping)</li> <li>Excessive nutrients that cause algae, harming aquatic populations and that leads to bacteria growth (Aesthetics, recreation sportfishing)</li> <li>Contaminated drinking water, or poor taste or odor (Human health, fish and wildlife health)</li> <li>Loss of fish and wildlife habitat (Recreation, open space)</li> </ul>	<ul style="list-style-type: none"> <li>Brownfields</li> <li>Navigational dredging</li> </ul>	<ul style="list-style-type: none"> <li>Wastewater treatment upgraded</li> <li>Some tributary remedial actions underway</li> </ul>	<ul style="list-style-type: none"> <li>Dredging</li> <li>Stream buffers</li> <li>More assessment</li> </ul>	<ul style="list-style-type: none"> <li>PCB disposal</li> <li>Local funding match for federal projects</li> </ul>	<ul style="list-style-type: none"> <li>Remediation of brownfields and sediments as Clean Michigan Initiative funds become available</li> </ul>	



# Appendix B continued

## Lake Michigan Areas of Concern

April 16, 2002

For more information, visit the AOC website <http://www.on.ec.gc.ca/glimr/rapr/aoc-map.html>

AOC Name	Primary Contaminants	Geographic Area	Stressors	Impacts on Human, Aquatic, and Wildlife Health, the Environment, and the Economy and their Effects	Programs	Clean-Up Actions	Key Activity Needed	Barrier	Next Step
<b>Sheboygan River Wisconsin</b>	<ul style="list-style-type: none"> <li>Solids</li> <li>Pathogens</li> <li>Phosphorus</li> <li>Nitrogen</li> <li>PCBs</li> <li>PAHs</li> <li>Heavy metals</li> </ul>	The lower Sheboygan River downstream from the Sheboygan Falls Dam, including the entire harbor and nearshore waters	<ul style="list-style-type: none"> <li>Industrial &amp; agricultural runoff</li> </ul>	<ul style="list-style-type: none"> <li>Restrictions on eating fish and fowl (Human health, sportfishing, recreation)</li> <li>Harmed fish and wildlife health and reproduction (Ecosystem sustainability, human health, recreation)</li> <li>Deformities or reproductive problems for fish, birds or animals and tumors in fish (Ecosystem sustainability, human health, recreation)</li> <li>Harmed bottom dwelling aquatic life (Ecosystem sustainability)</li> <li>Restricted dredging (Shipping)</li> <li>Excessive nutrients that cause algae, harming aquatic populations and that leads to bacteria growth (Aesthetics, recreation sportfishing)</li> <li>Impaired food supply at bottom of the food chain (Ecosystem sustainability, sportfishing)</li> </ul>	<ul style="list-style-type: none"> <li>Superfund</li> <li>Natural Resource Damage Assessment</li> </ul>	<ul style="list-style-type: none"> <li>Partial removal of PCB-contaminated sediments</li> <li>Agency decision (2001)</li> </ul>	<ul style="list-style-type: none"> <li>Completion of PCB remediation</li> <li>Control buffers</li> <li>Habitat protection</li> </ul>		<ul style="list-style-type: none"> <li>2004 dredging start</li> </ul>
<b>Waukegan Harbor Illinois</b>	<ul style="list-style-type: none"> <li>PCBs</li> </ul>	1.2 square kilometers of industrial, commercial, municipal and open lands.	<ul style="list-style-type: none"> <li>Sediments</li> </ul>	<ul style="list-style-type: none"> <li>Harmed bottom dwelling aquatic life (Ecosystem sustainability)</li> <li>Restricted dredging (Shipping)</li> <li>Beach closings (Recreation, human health)</li> <li>Impaired food supply at bottom of the food chain (Ecosystem sustainability, sportfishing)</li> <li>Loss of fish and wildlife habitat (Recreation, open space)</li> </ul>	<ul style="list-style-type: none"> <li>Superfund</li> <li>Brownfields</li> </ul>	<ul style="list-style-type: none"> <li>Corps navigation dredging Phase II</li> <li>Sediment removal (approximately 1 million pounds of PCBs)</li> </ul>	<ul style="list-style-type: none"> <li>Dredging</li> <li>Brownfield development</li> <li>Habitat restoration</li> </ul>	<ul style="list-style-type: none"> <li>Contaminated material disposal</li> </ul>	<ul style="list-style-type: none"> <li>Final dredging and disposal of inner harbor extension sediments</li> </ul>
<b>White Lake Michigan</b>	<ul style="list-style-type: none"> <li>Heavy metals</li> <li>Stormwater nonpoint pollution</li> <li>Arsenic</li> <li>Chromium</li> </ul>	Includes White Lake and a one-quarter mile wide zone around the lake.	<ul style="list-style-type: none"> <li>Sediments</li> <li>Industrial contamination</li> <li>Groundwater contamination</li> </ul>	<ul style="list-style-type: none"> <li>Restrictions on eating fish (Human health, sportfishing, recreation)</li> <li>Harmed fish and wildlife health and reproduction (Ecosystem sustainability, human health, recreation)</li> <li>Harmed bottom dwelling aquatic life (Ecosystem sustainability)</li> <li>Restricted dredging (Shipping)</li> <li>Excessive nutrients that cause algae, harming aquatic populations and that leads to bacteria growth (Aesthetics, recreation sportfishing)</li> <li>Contaminated drinking water, or poor taste or odor (Human health, fish and wildlife health)</li> <li>Algal blooms reduce recreational and visual appeal (Recreation, ecosystem sustainability)</li> <li>Loss of fish and wildlife habitat (Recreation, open space)</li> </ul>	<ul style="list-style-type: none"> <li>Superfund</li> <li>RCKA</li> </ul>	<ul style="list-style-type: none"> <li>Public education</li> </ul>	<ul style="list-style-type: none"> <li>Dredging</li> <li>Stream buffers</li> </ul>	<ul style="list-style-type: none"> <li>PRP court case</li> </ul>	<ul style="list-style-type: none"> <li>Dredging in "Tannery Bay" (2002)</li> <li>Occidental Chemical site 2002</li> </ul>

## Appendix C

# References for the Lake Michigan Mass Balance Project

- Baker, Capel and Eisenreich. 1986. Influence of colloids in sediment-water partition coefficients of polychlorinated biphenyls in natural waters. *Envir. Sci. Technol.* 20:1136-1143.
- Baker, J. E. and S. J. Eisenreich. 1990. Concentrations and fluxes of polycyclic aromatic hydrocarbons and polychlorinated biphenyls across the air-water interface of Lake Superior. *Environ. Sci. Technol.* 24(3):342-352.
- Bamford, H.A., Poster, D.L. and J.E. Baker. 2000. Henry's law constants of polychlorinated biphenyl congeners and their variation with temperature. *J. Chem. Eng. Data.* 45:1069-1074.
- Bamford, H.A., Poster, D.L. and J.E. Baker. (in press) Using extrathermodynamic relationships to model the temperature dependence of Henry's law constants of 209 PCB congeners.
- Eadie, B.J., N.R. Moore head and P.F. Landrum. 1990. Three-phase partitioning of hydrophobic organic compounds in Great Lakes waters. *Chemosphere* 20(1-2): 161-178.
- Edgington, D.N. and J. A. Robbins. 1976. Records of lead deposition in Lake Michigan sediments since 1800. *Environ. Sci. Technol.* 10:266-274.
- Edgington, D.N. 1991. Sediment core data for the Green Bay Mass Balance Study. Center for Great Lakes Studies, University of Wisconsin - Milwaukee.
- Endicott, D.D., W.L. Richardson, and D.J. Kandt. 1992. MICHTOX: A Mass Balance and Bioaccumulation Model for Toxic Chemicals in Lake Michigan. Draft Report. U.S. Environmental Protection Agency, Office of Research and Development, ERL-Duluth, Large Lakes Research Station, Grosse Ile, Michigan. 183 pp.
- Endicott, D.D., 2002. Lake Michigan Mass Balance Project: Modeling Total PCBs using the MICHTOX Model. Report by Great Lakes Environmental Center for the U.S. Environmental Protection Agency, Great Lakes National Program Office, Contract No. 68-C-98-1034, Work Assignment 3-30.
- Richardson, W. L., D.D. Endicott, R. G Kreis, Jr., K. R. Rygwelski. 1999. The Lake Michigan Mass Balance Project: Quality Assurance Plan for Mathematical Modeling. U.S. Environmental Protection Agency, Office of Research and Development, ERL-Duluth, Large Lakes Research Station Grosse Ile, Michigan.
- Robbins and Edgington. 1975. Determination of recent sedimentation rates in Lake Michigan using Pb-210 and Cs-137. *Geochimica et Cosmochimica Acta.* 39:285-304.
- Robbins, J.A. 1985. The coupled lakes model for estimating the long-term response of the Great Lakes to time-dependent loadings of particle-associated contaminants. *NOAA Technical Memorandum ERL GLERL-57.* Great Lakes Environmental Research Laboratory, Ann Arbor, Michigan.
- Schwarzenbach, R.P., Gschwend, P.M. and D.M. Imboden .1993. *Environmental Organic Chemistry.* Wiley and Sons. New York.
- Thomann, R.V. and D.M. Di Toro.1983. Physicochemical model of toxic substances in the Great Lakes. *J. Great Lakes Res.* 9(4):474-496.
- Wanninkhoff, R.J. 1992. *J Geophys. Res.* 97:7373-7381
- U.S. Environmental Protection Agency. June 1997. Lake Michigan Mass Balance Study (LMMB) Methods Compendium Volume 1: Sample Collection Techniques. Great Lakes National Program Office. EPA 905-R-97-012a, 403pp.
- U.S. Environmental Protection Agency. June 1997. Lake Michigan Mass Balance Study (LMMB) Methods Compendium Volume 2: Organic and Mercury Sample Analysis Techniques. Great Lakes National Program Office. EPA 905-R-97-012b, 532pp.
- U.S. Environmental Protection Agency. June 1997. Lake Michigan Mass Balance Study (LMMB) Methods Compendium Volume 3: Metals, Conventional, Radiochemistry, and Biomonitoring Sample Analysis Techniques. Great Lakes National Program Office. EPA 905-R-97-012c, 505pp.
- U.S. Environmental Protection Agency. October 1997. Lake Michigan Enhanced Monitoring Quality



Assurance Program Plan. Great Lakes National Program Office. EPA 905-R-97-017, 134pp.

U.S. Environmental Protection Agency. October 1997. Lake Michigan Mass Budget/Mass Balance Work Plan. Great Lakes National Program Office. EPA-905-R-97-016, 145pp.

### **Reports on the Lake Michigan Mass Balance still in a draft stage to be completed by December 2002**

Results of the Lake Michigan Mass Balance Study: Atrazine Data Report December 2001, US EPA Great Lakes National Program Office, 905R-01-010

Results of the Lake Michigan Mass Balance Study: Polychlorinated Biphenyls and trans-Nonachlor Data Report December 2001, US EPA Great Lakes National Program Office, 905R-01-011

Results of the Lake Michigan Mass Balance Study: Mercury Data Report December 2001, US EPA Great Lakes National Program Office, 905R-01-012

The Lake Michigan Mass Balance Study Quality Assurance Report, December 2001, US EPA Great Lakes National Program Office, 905R-01-013

For more Lake Michigan Mass Balance publications, see <http://www.epa.gov/glnpo/lmmb/pub.html>

**Unit Conversions**

<b>Symbol</b>	<b>Unit</b>	<b>Multipliers</b>
kg	kilogram	$10^3$
g	gram	1
mg	milligram	$10^{-3}$
ug	microgram	$10^{-6}$
ng	nanogram	$10^{-9}$
pg	picogram	$10^{-12}$

Graphics courtesy of Office of Research and Development  
National Health and Environmental Effects Research Laboratory  
Mid-Continent Ecology Division  
Grosse Ile, Michigan

